

CLAIMS

1. A photosensitive composition for an interlayer insulation film, characterized by comprising: a modified polysilsesquiazane having a weight average molecular weight of 500 to 200,000 comprising basic constitutional units represented by formula -[SiR¹(NR²)_{1.5}]- wherein R¹'s each independently represent an alkyl group having 1 to 3 carbon atoms or a substituted or unsubstituted phenyl group; R²'s each independently represent hydrogen, an alkyl group having 1 to 3 carbon atoms, or a substituted or unsubstituted phenyl group, up to 50% by mole of said basic constitutional units having been replaced by a linking group other than the silazane bond; a photoacid generating agent; and a basic material.

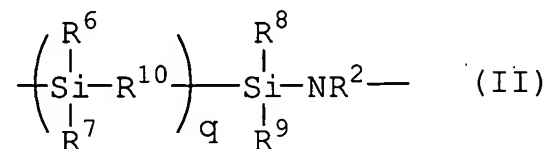
2. The photosensitive composition for an interlayer insulation film according to claim 1, wherein said modified polysilsesquiazane further comprises 0.1 to 100% by mole, based on said basic constitutional units, of other constitutional units represented by formulae -[SiR³₂NR²]- and/or [SiR³₃(NR²)_{0.5}]- wherein R³'s each independently represent hydrogen, an alkyl group having 1 to 3 carbon atoms, or a substituted or unsubstituted phenyl group; and R²'s each independently represent hydrogen, an alkyl group having 1 to 3 carbon atoms, or a substituted or unsubstituted phenyl group.

3. The photosensitive composition for an interlayer insulation film according to claim 1 or 2, wherein said linking group is represented by formula (I):



wherein R⁴ and R⁵ each independently represent hydrogen, or an alkyl, alkenyl, cycloalkyl, aryl, aralkyl, alkylamino, alkylsilyl, or alkoxy group; and p is an integer of 1 to 10.

4. The photosensitive composition for an interlayer insulation film according to claim 1 or 2, wherein said linking group is represented by formula (II):



wherein R^6 , R^7 , R^8 , and R^9 each independently represent an alkyl, alkenyl, cycloalkyl, aryl, aralkyl, alkylamino, alkylsilyl, or alkoxy group; R^{10} represents an oxygen atom or an alkylene, alkenylene, cycloalkylene, arylene, alkylimino, or alkylsilylene group; R^2 's each independently represent hydrogen, an alkyl group having 1 to 3 carbon atoms, or a substituted or unsubstituted phenyl group; and q is an integer of 1 to 10.

5. The photosensitive composition for an interlayer insulation film according to claim 4, wherein R^6 , R^7 , R^8 , and R^9 represent a methyl group, R^{10} represents a phenylene group, R^2 represents hydrogen, and q is 1.

6. The photosensitive composition for an interlayer insulation film according to any one of claims 1 to 5, wherein said photoacid generating agent is selected from the group consisting of sulfoxime compounds and triazine compounds.

7. The photosensitive composition for an interlayer insulation film according to any one of claims 1 to 6, wherein said basic material is selected from the group consisting of higher amines, hindered amines, and alkanolamines.

8. The photosensitive composition for an interlayer insulation film according to any one of claims 1 to 7, which further comprises 0.1 to 40% by mass, based on the photosensitive composition, of a dissolution preventive selected from the group consisting of t-butoxycarbonylated catechol, t-

butoxycarbonylated hydroquinone, t-butyl benzophenone-4,4'-dicarboxylate, and t-butyl 4,4'-oxydibenzoate.

9. The photosensitive composition for an interlayer insulation film according to any one of claims 1 to 8, which further comprises a nitro- or carbonic ester-containing water-soluble compound as a shape stabilizer.

10. The photosensitive composition for an interlayer insulation film according to any one of claims 1 to 8, which further comprises a sensitizing dye.

11. A method for forming a patterned interlayer insulation film, characterized by comprising: forming a coating of a photosensitive composition for an interlayer insulation film, comprising a modified polysilsesquiazane, a photoacid generating agent, and a basic material, said modified polysilsesquiazane having a weight average molecular weight of 500 to 200,000 comprising basic constitutional units represented by formula $-\text{SiR}^1(\text{NR}^2)_{1.5}-$ wherein R^1 's each independently represent an alkyl group having 1 to 3 carbon atoms or a substituted or unsubstituted phenyl group, R^2 's each independently represent hydrogen, an alkyl group having 1 to 3 carbon atoms, or a substituted or unsubstituted phenyl group, up to 50% by mole of said basic constitutional units having been replaced by a linking group other than a silazane bond; exposing said coating pattern-wise to light; dissolving and removing the coating in its exposed area; and subjecting the residual patterned coating in an ambient atmosphere to standing or baking.